

Amendments to the Drawings

The replacement drawing sheet, which is presented in **Attachment A**, includes changes to Figure 1. Specifically, label 109 was modified, to include its function of a “Network Circuit” as disclosed in the Specification at page 11, line 109.

Attachment A: Replacement Drawing Sheet

REMARKS

Reconsideration of the application in light of the amendments and the following remarks is respectfully requested.

Status of the Claims

Claims 1-5 are pending. Claims 1 and 3 have been amended. No new matter has been added.

Status of the Specification

The Examiner has objected to the Specification for containing informalities. These informalities have been addressed by appropriate amendment of the Specification. Applicants request withdrawal of this objection.

Preliminary Amendment and IDS Filed Concurrently with the Application.

Concurrently with the mailing of this application on June 24, 2005, Applicants submitted a Preliminary Amendment and an Information Disclosure Statement. A copy of the acknowledged return-receipt postcard included in the mailing of this application is presented in **Attachment B**. The stamped postcard demonstrates that the "First Preliminary Amendment (6pp)," the "IDS (2pp)," and the "PTO/SB/08A (1pg)," were included in the papers received by the Patent Office with the mailing of this Application. A copy of the Preliminary Amendment as submitted can be found in **Attachment C**, and a copy of the IDS and associated PTO/SB/08A can be found in **Attachment D**.

Applicants respectfully request that the Preliminary Amendment and the IDS submitted with the preliminary amendment in this application be entered and considered by the Examiner. Furthermore, under Section 707.07(i) of the MPEP, “[i]n every Office action, each pending claim should be mentioned by number, and its treatment or status given.” Therefore, because the Examiner did not consider each and every claim pending in the application prior to issuance of the July 23, 2006 Office Action, Applicants submit that if the claims submitted herewith are not allowed, the subsequent Office Action should not be made Final.

Claim Rejections Under 35 U.S.C. § 101

Claims 1-4 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Examiner contends that “[t]he program by itself is not enabling the computer to function as a system.”

Claims 1 and 2

With respect to claims 1 and 2, the Examiner contends that “the means” recited therein corresponds to computer software such as dynamic programming note in page 5 of the instant specification,” and are therefore treated as method claims. (Detailed Action, item 5, page 3.) The Examiner further contends that the claims lack a physical transformation, or a useful, concrete and tangible result. (Detailed Action, item 5, page 3.) Applicants respectfully disagree.

The Examiner interprets the “means” of the computer software as “a dynamic programming noted in page 5 of the instant specification.” (Office Action, item 5, page 3.) However, claim 1 has been amended to recite “[a] computer-based system for measuring the similarity between protein profile matrices stored in a computer readable medium to predict a

protein three-dimensional structure.” Thus, claims 1 and 2 are not directed to “computer software, such as . . . dynamic programming,” but rather a computer system including a computer readable medium that stores protein profile matrices and includes the recited means to access and transform the profile matrices stored in the computer to “form[] a score matrix.” Thus, claims 1 and 2 should be treated as product claims. (*See* MPEP § 2106 (IV)(B)(2)(a).)

Furthermore, the claimed invention, recites a “means for preparing two profile matrices,” a “means for calculating correlation coefficients between” the profile matrices, and a “means for forming a score matrix comprising said correlation coefficients.” The score matrix produced by the claimed invention is a useful, concrete, and tangible result.

The specification states that the score matrix “allows the final scores between the two profile matrices (the similarity between the matrices) to be calculated with high accuracy.” (Specification at page 17, lines 9-11). The specification further discloses that a score matrix can be used by Dynamic Programming to find an optimal path seek the final scores. (*See* Specification at page 17, lines 12-17). Thus, the result of the claimed invention is useful in calculating the similarity between profile matrices and predicting the three-dimensional structure of proteins.

Furthermore, the score matrix that is produce by claim 1 is a tangible result. The system recited by claim 1 sets forth the practical application of transforming protein profile matrices based on a plurality of proteins to a score matrix that can be used to predict a protein three-dimensional structure.” Thus, claim 1 does not recite a mere abstraction, but it sets forth a substantial practical application.

The invention set forth by claim 1 also produces a concrete result. A concrete result requires that the process must be substantially repeatable. The claimed invention includes

mathematical operations on matrices to produce a score matrix. If the system is provided with a given set of protein profile matrices, the same score matrix will be repeatably produced. Thus, the claimed invention produces a concrete result.

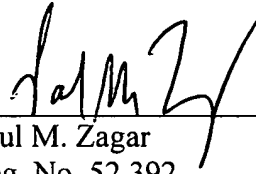
In *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368, 1373 (Fed Cir. 1998.), the court held that “the transformation of data, representing discrete dollar amounts by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula or calculation, because it produces a ‘useful, concrete and tangible result’ - a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” Similarly, the present invention transforms data, representing protein profiles, through a series of mathematical calculations into a score matrix, constitutes a practical application of a mathematical algorithm, formula or calculation because it produces a useful, concrete and tangible result - a score matrix that can be relied upon to predict the three-dimensional structure of proteins.

Therefore, for at least the reasons discussed above, claim 1 is directed to a concrete, tangible, and useful result. Thus, claim 1 recites statutory subject matter under 35 U.S.C. § 101.

Claim 2 further recites, “predicting a protein three-dimensional structure . . . using a score matrix formed through a system set forth in claim 1.” Thus, as discussed above, the score matrix is a useful, concrete, and tangible result, and the three-dimensional protein structure predicted by claim 2 is a useful, concrete and tangible result. Therefore, claim 2 is directed to statutory subject matter.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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